

REPORT
ON THE
COAL AREA
OF THE
MEDICINE HAT COAL
MINING COMPANY.

Near Medicine Hat, North-West Territories,
CANADA.

Toronto :
COPP, CLARK & CO. GENERAL PRINTERS, COLBORNE STREET,
1884.

REPORT ON THE COAL AREA

OF THE

Medicine Hat Coal Mining

COMPANY,

NEAR MEDICINE HAT, NORTH-WEST TERRITORIES,

CANADA.

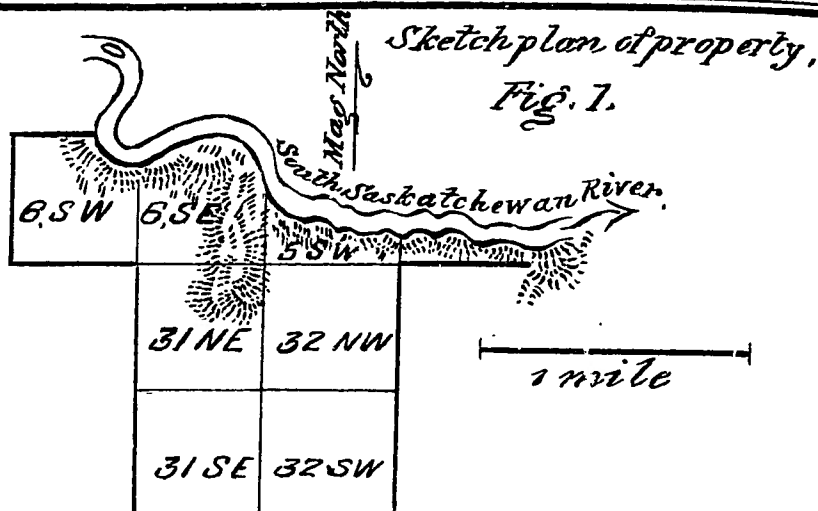
The Medicine Hat Coal & Mining Co (Limited)

Provisional Directors

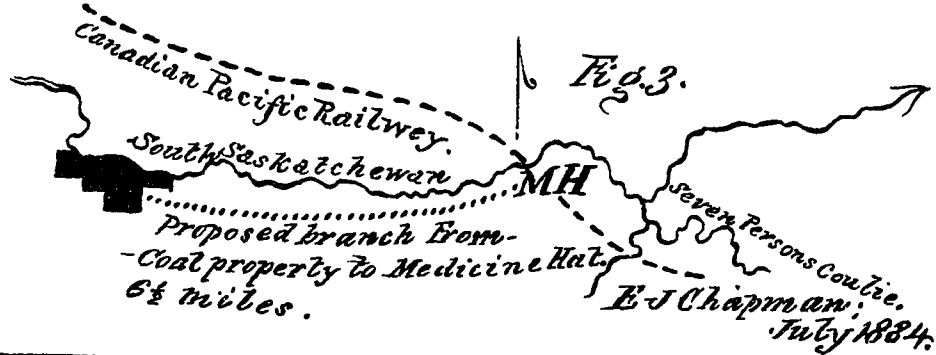
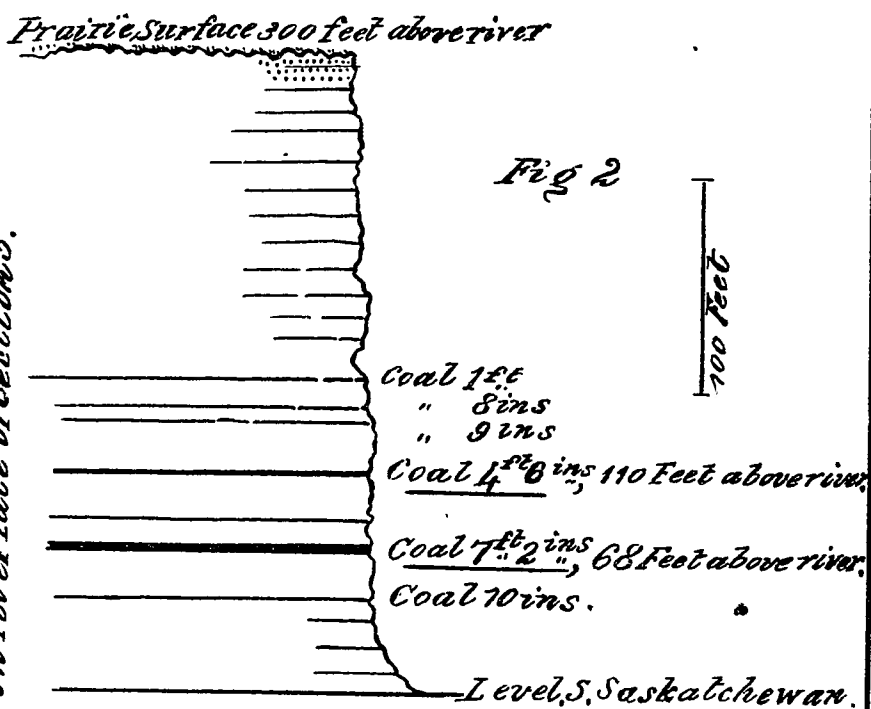
Hector Cameron	Esq	L.C.	Trusts
Arthur R Boswell	"	Barister	"
John Smith	"		"
W. G. McWilliams	"	"	"
Roger Lambie	"	Merchant	"
Thomas Davies	"	Brewer	"
Arthur Armstrong	"		Physician
Charles McMichael	"	Barister	Trusts

Trustees of Property

Arthur R Boswell	Esq	Mayor of Town
John Smith	"	M.P.
Hector Cameron	"	M.P.



Profile, shewing position of coal seams
on river face of Section 5.



REPORT ON THE COAL AREA
OF THE
Medicine Hat Coal Mining Co'y,
NEAR MEDICINE HAT, NORTH-WEST TERRITORIES, CAN.

To HECTOR CAMERON, Esq., Q.C., M.P., &c., Toronto.

SIR,—In accordance with your instructions I have made a careful examination of the coal property of your Company on the south bank of the South Saskatchewan River, near Medicine Hat, and I have now the honour to present a condensed statement of the results of my investigation.

Site and General Description of the Property.—In the lithographed plate accompanying this Report, Figure 1 shows the limits of the property on the right bank of the South Saskatchewan River, and Figure 3 shows the situation of the property as regards Medicine Hat, on the line of the Canadian Pacific Railway. The property itself (according to my instructions) comprises three entire, two nearly entire, and two broken quarter-sections, namely: The S.W. and S.E. quarters of Section 6, (approximately 250 acres), S.W. and S.E. quarters of Section 5 (approximately 90 acres), in Township 13, Range 6; N.E. quarter of Section 31 (160 acres);* N.W. and S.W. quarters of Section 32 (320 acres), in Township 12, Range 6, all west of the fourth principal meridian, in the North-West Territories of Canada.

On Sections 5 and 6 the ground ranges for two miles along the bank of the river, rising abruptly, in an almost perpendicular escarpment, to an

* I would strongly recommend the additional purchase of the S. E. Quarter of this Section, if it can be obtained.—E. J. C.

average elevation of 290 or 300 feet. This is broken, near the dividing line of Sections 5 and 6, by a broad coulée or gully, (dry at the time of my visit) which runs back, with lateral branches or irregular sub-divisions, to a distance of about 1200 feet. The seams of coal, described below, are visible along the steep sides of this gully, although hidden in places by slides and accumulations of debris fallen from above. At the top of the escarpment, the ground forms the level surface of the prairie. The soil, although somewhat sandy, would yield under cultivation fair crops of cereals and roots, as shown at places in the vicinity. From the coal property to the small town of Medicine Hat, where the Canadian Pacific Railway crosses the river, the distance over the almost level prairie is $6\frac{1}{2}$ miles. There would be no streams to cross, nor any engineering difficulties to overcome, in the construction of a light line of railway from the mine to Medicine Hat. For the greater part of the distance the rails might be laid on the practically unbroken surface of the ground. In opening the mine, the construction of a railway of this kind is indispensable, as the river is only navigable during a small portion of the year, and there are difficulties in the way of using it for transportation during the winter months.

2. Coal Seams Underlying the Property.—On the face of the escarpment fronting the river, and on the sides of the coulée running back from the river at almost right angles, several beds or layers of coal are distinctly traceable. Five of these layers vary in thickness, individually, from about eight or nine inches to a foot, but two additional seams are of workable dimensions. The lower of the two seams outcrops at an elevation of 68 or 70 feet above the average level of the river, and presents a uniform thickness of at least seven feet. Where measured at several places, one hundred feet or more apart, on the escarpment and east side of the coulée, it showed 7 feet 2 inches. An average thickness of seven feet may therefore be fairly given to it. The upper (workable) seam presents a thickness of 4 feet 6 inches, and outcrops at an elevation above the river of 110 feet, as shown in the section, Figure 2, of the lithographed plate which accompanies this Report. These workable seams must necessarily underlie the entire area of the Company's property, and so far as regards the limits of this property I do not think that any fear need be entertained of the seams diminishing in thickness. East of the property, however, and on the north side of the river, the coal seams evidently decrease in thickness, running down on approaching Medicine Hat to between 3 and 4 feet. The seams, with their associated strata, although exhibiting slight undulations, are practically horizontal. The interstratified beds comprise alternations of clay shales, sandy clays, thin-bedded sandstones, plastic clays,

bands of disintegrating fresh water shells (chiefly *unios*), and thin layers of ironstone ; the whole capped by from 20 to 30 feet of drift gravel, holding boulders of crystalline rock. The plastic clays have been cited as "fire-clays," but they are scarcely fire-clays, properly so called, as they contain a certain amount of iron, and thus assume a pale-red or tawny colour on ignition. They would form a good material, however, for the manufacture of pottery or a fine quality of brick. The ironstone bands average only seven or eight inches in thickness, and are thus of no commercial value.

Deducting the area of the coulée and its ramifications, and that of the broken river-front, from Section 6, the area of good, workable coal under the property may be fairly estimated at 770 acres. This, with the average specific gravity of the coal equal to 1.31, gives the large amount of 9,580,340 Canadian tons (of 2000 lbs.) for the contents of the 7 feet seam ; and 6,163,850 tons for the 4½ feet seam. Allowing for pillars and loss, about one-third of this amount, or, in round numbers, three millions of tons from the lower seam, alone, would be immediately available ; and about two millions from the upper seam. Assuming that only the lower seam were worked, and that the average annual output were fifty thousand tons (or about 150 tons a day), a period of sixty-five years would only exhaust the immediately available portion of this seam, and the coal pillars would then supply an equal amount for a still longer period.

3. Method of Winning or Mining the Coal.—In consequence of the character of the ground, the coal on this property would have to be raised by an ordinary shaft, sunk inland at a suitable distance from the river front. The exact position of the shaft must, of course, be left to the engineer in charge of the mine, but a spot near the south-west corner of Section 5 would probably be selected. The depth of the shaft with its sump would be about 40 fathoms, or 240 feet. A day-level could be run from the shaft to the outcrop of the coal on the river bank ; and another could be driven, if necessary, so as to open on the side of the coulée or gully in the west. The shaft would, of course, be dead-work, but the adits or levels would be driven in the coal itself. Good ventilation and drainage would thus be obtained. There seems to be little apprehension of fire-damp, and the underground works would, I think, prove unusually dry. At the Woodsworth mine, on the opposite side of the river, I went with a naked candle 300 feet into a low drift, and found the air at that distance practically as good as at the entrance, and there was no water to speak of. The seam there is only 4 ft. 8 in. in thickness, and, as the natural roof has not been taken out, the height is not sufficient to allow the use of ponies in the bords or coal passages. This adds about 15 cents per ton to the cost

of getting the coal—a drawback which the 7-foot seam on the Company's property would be free from.

Items of cost and other engineering details as regards the opening and equipment of the mine do not belong properly to the present Report, but should be obtained from a specially qualified engineer conversant with prices ruling in the North-West Territories. I may state, however, from data kindly furnished by Mr. Lawson, an engineer of many years' experience in the coal-pits of Nova Scotia, now Superintendent of the Woodworth mines, that the entire cost of getting the coal from the 7-foot seam ought not (on an assumed output of 150 tons per day) to exceed 80 or 85 cents per ton delivered on the cars at Medicine Hat,* and that a sum of about \$110,000 would be sufficient to open and equip the mine, and construct the branch railway and siding. In the estimated cost of getting the coal, 5 cents per ton have been allowed for timbering, 55 cents per ton for winning or mining, and \$30 per day for underground and surface hands, including fireman, engineer, haulers, loaders, carpenter, blacksmith, bottom-man, bank-man, &c., and feed of horses.

4. Quality of the Coal.—The coal which underlies this property, like that of the region generally, is a brown coal of Upper Cretaceous age, intermediate in character between ordinary lignite and ordinary bituminous coal of the Carboniferous Formation proper. It ignites readily, burns with vivid flame, and leaves comparatively little ash, without forming clinkers. The ash, if covered up, remains in ignition for several hours. For culinary and other domestic use the coal is of excellent quality, and some of exactly similar character from the other side of the river has been tried on locomotives with very satisfactory results. The non-formation of clinkers is an especially good character, as there is thus no adhesion to the grate or bars, and no stoppage of the draught. The general freedom of the coal from pyrites or "brasses," so common in ordinary coals, is another favourable character. There is, however, one defect attached to the coal, namely, its tendency to fall into small pieces or "slack" when exposed to the weather, and also its general brittleness by which loss is occasioned in mining it, if heavy shots are used and the coal be recklessly handled. As the mining would be done, however, by contract, the miner, from self-interest, would take care to make as little slack as possible. The tendency of the coal to disintegration may be entirely overcome by keeping the coal under cover. Where stored at Winnipeg or other places, covered sheds should be provided for its storage. The slack coal might be rendered

* At a daily output of 300 tons the cost would be reduced to 75 cents per ton.—E. J. C.

available for local consumption by mixing it with a sufficient amount of the associated plastic clay to serve as a binding material, and moulding the mixture roughly into bricks. These would remain ignited after the volatile matter of the coal had burnt off and would throw out a considerable amount of heat. Anything in the shape of fuel, it must be remembered, is of high value in that practically woodless region, with its long and severe winters. There can be no doubt, therefore, that the coal would meet with a ready sale along the line of the Canadian Pacific Railway, both at Winnipeg and at intermediate towns and settlements, as Moose Jaw, Regina, Brandon, Portage la Prairie, &c., more especially as coal does not seem likely to be discovered, in workable quantity, in the immediate vicinity of the line east of Medicine Hat.

The following are the results of analyses made personally in my laboratory at the School of Practical Science, Toronto :—

1. Sample of coal taken from an opening 40 feet from out-crop on face of escarpment, near bottom of seam :

Moisture	13'61
Volatile combustible matter	36'02
Fixed Carbon	46'11
Sulphur	0
Ash	4'28

2. Sample taken as above, but from near centre of seam :—

Moisture	13'36
Volatile combustible matter	36'33
Fixed Carbon	45'98
Sulphur	0
Ash	4'39

3. Sample taken as above, but from upper part of seam :—

Moisture	13'58
Volatile combustible matter	35'95
Fixed Carbon	46'04
Sulphur	0
Ash	4'4

4. Small sample taken from out-crop of the upper workable seam, on west face of the lateral coulée, Section 6 :—

Moisture	18'22
Volatile combustible matter.....	33'78
Fixed Carbon	42'36
Sulphur.....	0
Ash	5'63

These analyses—sample No. 4 being understood to be partially weathered—indicate a brown coal of unusually good quality, more especially as regards its freedom from sulphur and its comparatively low amount of ash. Taking into consideration, therefore, the favourable position of this property, the amount of coal and the thickness of the principal seam upon it, and the good quality of the coal, I have no hesitation in expressing my conviction that the property, under judicious management, should yield a very ample return for the capital invested in its development.

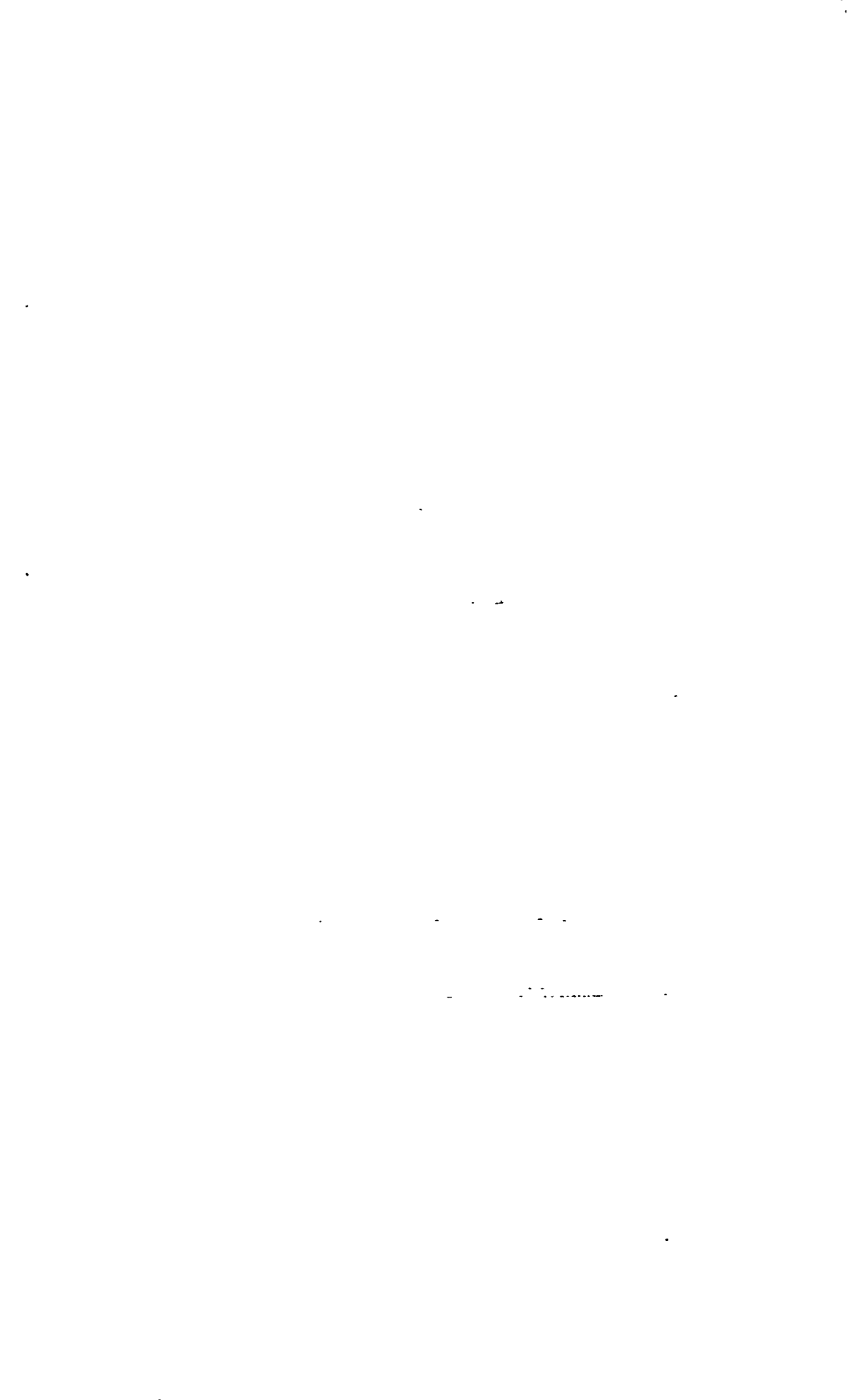
E. J. CHAPMAN, PH. D.,

*Professor in University College and School of Practical Science,
Toronto, and Consulting Mining Engineer.*

TORONTO, July 15, 1884.

* * Since this Report was written, the S.E. quarter of Section 31 has been obtained by the Company. This purchase adds 160 acres to the area of the property,—making the total amount of tons in the 7-foot seam equal to 11,571,060 tons, and in the 4½-foot seam to 7,444,650 tons.—
E. J. C.

DATA OF
COAL MINING PROPERTY
IN THE
NORTH-WEST TERRITORY
OF CANADA.



DATA OF COAL MINING PROPERTY

IN THE

NORTH-WEST TERRITORY OF CANADA.

1. The owners are Lessees from the Crown of about 640 acres described as follows :—

South $\frac{1}{2}$ Section 6, Township 13, Range 6, west of 4th Principal Meridian.

West $\frac{1}{2}$ Section 32, Township 12, Range 6, west of 4th Principal Meridian.

Also Lessees, under conditions expressed in a memorandum from the Canadian Pacific Railway Co., of the adjoining lands, described as follows :—

South $\frac{1}{2}$ of Section 5, Township 13, Range 6, west of 4th Principal Meridian.

East $\frac{1}{2}$ of Section 31, Township 12, Range 6, west of 4th Principal Meridian, containing about 450 acres, making in the whole about 1000 acres.

2. These lands are situated some six miles west of Medicine Hat, the point where the Canadian Pacific Railway crosses the South Saskatchewan River. They are recognized as the most valuable and extensive coal deposits in that district. No seam of equal dimensions has as yet been discovered in any portion of the North-West Territory. Two seams, one of 4 feet 6 inches and the other 7 feet in thickness, have their outcrop on the bank of the south side of the river, and they have been traced a distance of twelve hundred feet. This thickness, and the geological formation of the district, is such as to preclude the possibility of the deposit being liable to interruption. An unquestionably competent authority estimates that there are more than seventeen million tons of

coal underlying these lands. A miner of many years' experience expressed his opinion in substance and effect as follows : " If these mines were worked for fifty years, and a thousand tons a day taken, the supply of coal remaining would still be great." For all practical purposes, then, it may be said that the supply is inexhaustible. Coal from this location has been successfully tested on the Canadian Pacific Railway by a master engineer and others, and they report that it burns clearly, without bad odors, is particularly clean in burning, forming a white ash and leaving no clinkers, irrespective of excessive heat. For domestic purposes it has already had a lengthy and satisfactory trial; it has been most successfully used in cooking ranges and various kinds of coal stoves, in "base-burners" and "open grates." The best of gas has been made from it. The following is a copy of an analysis made by Professor Ellis :—

TORONTO, 14th September, 1883.

SIR,—I have analysed the sample of coal that you left with me on the 5th inst., with the following result :—

Specific gravity.....	1'400
Moisture.....	16'32
Ash.....	9'05
Coke.....	53'50
Volatile combustible matter.....	21'13
	<hr/>
	100'00

I am Sir, yours faithfully,

TO DR. KENNEDY.

W. H. ELLIS.

As to market the Canadian Pacific Railway Co. must necessarily be an extensive consumer for use on the main line of their railway, as at present located from Winnipeg westward, *via* Medicine Hat and Calgary, to and across the Rocky Mountains. Such a railway market, though enormous in itself, must necessarily increase annually. The great natural resources of the North-West Territories are well known, but these resources are but partially developed by the main line of the C. P. R. Lines to the north, west and south towards the U. S., have been projected and located by capitalists, and in a very short time construction work on colonization lines will have been commenced. Doubtless one or more of these lines will make Medicine Hat their starting-point. This place, from its favorable position as a Railway Centre, in addition

to its being a terminus on a river navigable towards the north (where is found a section of country unequalled from an agricultural point of view) is beyond all doubt destined to become a point of great importance. The settlement of the country eastward and westward from Medicine Hat is progressing at a rate that in other countries has been unheard of. Numerous cities, towns and villages are springing up at various points, and farming along the entire railway is being extensively carried on. This in itself speaks of the enormous domestic consumption of coal that must take place. It should also be borne in mind that such consumption is of a local character, though fractional as compared to other demands. Wood in the North-West cannot be classed as marketable fuel. When obtainable, it is and must ever remain in demand for house-building purposes. The fact that coal is found underlaying a vast area of the North-West, is most apt to prove misleading as regards the few (exceptionally few, it is asserted) favorably situated mines. To the experienced miner the situation of a mine is the sole factor that regulates its value. And then, again, the existence of this vast area of coal lands merely proves that nature has supplied coal as a fuel in a country devoid of wood. Small and limited seams are, so to speak, but pointers to the few rich and inexhaustible deposits; such small and limited seams have been discovered eastward from Medicine Hat. Already some have been worked out, and these have proved to be, what other similar small seams are, utterly valueless. These few remarks apply in an undeniable manner to the coal lands east of Medicine Hat, but westward of the boundaries of the Province of Manitoba.

Coal lands westward from Medicine Hat are now being worked by companies, but the attempts to develop these mines have already demanded an enormous outlay of capital. Such must ever be the case with mines less favorably situated than the one herein referred to. In the case of the former, before the coal taken out can be placed on an equal footing with that of Medicine Hat, it must either be transported by water at very large outlay for a distance of some 160 miles on that portion of a river which at best is only navigable for eight or ten weeks in the year, or by a railroad extending over almost the same distance. The cost of the construction of such a railway cannot be expressed in thousands. These

obstacles must, for years to come, defy competition, even setting aside the first cost of freighting the coal, which must be considerable, even should a railway thus built be solely in the hands of a Coal Company owning the mines. It is evident, therefore, that the Medicine Hat coal mine described above, can, speaking only of its naturally favorable position, never suffer from competition. From the position of the coal seams, which are horizontal and on the river bank, coal shafts will be unnecessary. Tunnels and airshafts can be excavated with a minimum amount of labor expended thereon. The thickness of the seams is such (*vide* section sketch), that the tunnels pass through pure coal and no other substance. In these tunnels small horses, or native ponies, hauling tram-cars, can be employed. The natural drainage of the tunnels is simply marvellous. This is clear from the decided slope towards the Saskatchewan River, and has called forth expressions of admiration and astonishment from English and Nova Scotian miners employed in excavation. It is questionable if even a small hand-pump will ever be in demand; a simple drain made with pick and shovel is found adequate. The small amount of timber, obtainable at small cost, required in the tunnels, is a point, and one of inestimable value, in favor of the mine. To convey the coal from the mine to main line of the C. P. R., and on the extensive sidings of that Company at Medicine Hat, a short line of some seven miles (at greatest estimation) will require to be constructed, and so extremely favorable is the country passed over that such a line amply suitable to meet the demands required of it, can be constructed at a closely approximate cost of from \$3,000 to \$4,000 per mile. Several other methods could be employed to convey the coal to the railway at the point above-mentioned, and presumably at considerably less cost, which, however, by the plans specified, is so trifling as to forbid of deviation, more particularly from the fact that its adoption places the mine on best possible footing as regards successful development. It is estimated, and soundly so, that the coal so mined can be thus laid down on the C. P. R. siding at \$3.00 per ton. Its present selling price there is \$6.00 per ton. The mine could be equipped in eight weeks in a manner that would readily permit of 300 tons per day being taken out after a few months' work, with coal taken out at above rate, at least a thousand tons per day could then be mined.

The property has been partially developed by the opening of one or two tunnels of about 20 feet each. The following reports have been made with special reference to the locations offered. (1) Letter from George M. Dawson, Esq., Assistant Director of the Geological Survey of Canada :—

DEPARTMENT OF THE INTERIOR, CANADA.

Geological and Natural History Survey,

OTTAWA, Oct. 23rd, 1883.

J. A. GEMMILL, Esq. Ottawa.

My dear Sir,—In answer to your enquiries in reference to the Medicine Hat Coal, I may state that two important seams occur in that locality and are well shown in natural exposures in the banks of the South Saskatchewan River for several miles. The seams are nearly horizontal, or effected by light, undulating dips only, and though the thickness and character of the coals differ somewhat in the various sections, the persistence of the coal bearing character of the horizon is such as to give every confidence in its maintaining a workable thickness for a considerable, though as yet undefined distance, both north and south of the river. The manner in which the coal is naturally exposed in the scarped banks of the river renders its extraction easy and inexpensive, and where it has been already opened it proves to have a good sound roof and floor requiring little timbers, while water scarcely occurs in the measures. The exposures in the vicinity of the areas marked on your sketch indicate that the seams are here at least as well developed as in any part of the district, and with means of transport provided it will be a locality well situated for working.

The fuel, though strictly speaking a lignite coal, has been proved by actual trial to be well suited for all ordinary purposes, and its geographical position and proximity to the Canadian Pacific Railway line gives it a very considerable advantage in the eastern markets as compared with most of the coals of the North-West.

Yours very truly,

GEORGE M. DAWSON.

REPORT OF ROBERT WARD (CONTRACTOR FOR THE SASKATCHEWAN COAL MINES) ON THE ABOVE MENTIONED PROPERTY.

The principal seam is seven feet thick on the south-eastern corner of Section 6, and continues with that thickness down to 4 feet for a distance of 400 yards. East down the river, and west of the 7-feet seam, it becomes reduced to 3 feet 6 inches, but the average would be about 4 feet 9 inches. The quantity is unlimited—at least 6,000,000 tons to the square mile. Its quality as a steam coal is fairly satisfactory, the only objection being that it is light and it is carried through the smoke-stack before its properties are fully consumed. This can

be overcome by regulating fire-box and smoke-stack of engine. As a house coal it is first-class. The cost of production at present would be \$2.30 per ton at the pit's mouth, but this can be reduced materially by bringing in miners. The crossing of the river with the coal, hoisting to the bank, and laying of track to the Woodworth track, would be much more costly than the construction of a line from the pit by the N. E. side of the river to a point on the C. P. R. a short distance east of Medicine Hat. The mine could be worked quite as cheaply by the sinking of shafts and bringing coal to the surface. The distance from the mine to railway would be about six and one-half miles, and would cost from \$9,000 to \$10,000 per mile.

I estimate necessary and suitable machinery as follows :—

1 Double Engine, 40 horse-power each	\$
Sinking of shaft, 208 feet, about	750 00
40 Drills, at \$5.00 laid down.....	200 00
40 Coal Sledges, \$3.00 laid down.....	120 00
200 Picks, \$2.00 laid down.....	400 00
Pit Rails (8 lbs to the yard) 20 to 25 tons required, cost \$75 per ton laid down.....	1,875 00
Mine timbers for supporting, procurable west of Calgary, estimated.....	1,000 00

N.B.—No pumps required.

The consumption of coal in Manitoba and the North-West Territories will not at present exceed 250,000 tons per year. It is now worth \$6.00 to \$7.00 per ton at Medicine Hat and an average of \$10 per ton at points of importance east and west. I would recommend the employment of experienced miners, and contract (which they prefer) to dig by the running yard which in headings consists of 8 feet wide and 1 yard in ; their rate is \$7.00 a yard here, and find everything, powder and grub, oil, &c. The running yard will give an average of four and one-half tons. In this manner of conducting the mine the cost of production is much reduced.

ROBERT WARD,

Contractor Saskatchewan Coal Mines.

REPORT OF JOHN P. LAWSON, ESQ., M. E.

TO CAPTAIN COTTON, Regina, N. W. T.

Sir,—The following section of strata from Prairie Level to the Saskatchewan River level, taken near the south-eastern angle of section 6, Range 6, Tp. 13, west of P. Meridian, on your coal area in the Medicine Hat Coal District, will give you an idea of the position of the coal seams.

	Thickness in		Depth below Prairie Level.	
	ft.	in.	ft.	in.
Prairie Level	0	0		
Drift	15	0		
Boulder Drift	12	0	27	0
Sandy clays	29	0	56	0
Sandstone band	4	0	60	0
Light clay shales	31	0	91	0
Sandy shales	16	0	107	0
Sandstone band	2	0	109	0
Dark grey shales	8	0	117	0
Clay shales	30	0	147	0
Good Coal	1	0	148	0
Clay	4	0	152	0
Coal seam	0	6	152	6
Clay	3	0	155	6
Coal	0	6	156	0
Shales	30	0	186	0
Good coal top seam	4	6	190	6
Dark grey shales	37	0	227	6
Iron stone band	0	8	228	2
Sandy clays	6	0	234	2
Good coal, main seam	7	0	241	2
Clay	2	0	243	2
Brown sandy clays	40	0	283	2
Grey sandy clays	9	0	292	2

(Saskatchewan River Level.)

The shales and clays vary very much ; no two sections taken one hundred yards apart agree. By reference to the above section it will be seen there are two workable coal seams on this area, the top seam measuring four feet six (4 ft. 6 in.) inches of good coal, and the lower or main seam measuring seven feet (7 ft.) all good coal, with the exception of 2½ inches of calcereous clay in the centre of the seam. The character of this coal ranks high. It has proved to be a good steam coal, and is well liked for domestic purposes. It gives out a strong heat, burns up freely, and leaves neither clinker nor cinder.

An analysis gave

Water	5'3
Volatile combustible matter	36'5
Fixed carbon	52'9
Ash light and firm	5'3

Mr. Richardson, an Inspector of coal mines in England, says of this coal :—

“The composition of this coal is typical of the coal found in Wyoming and Colorado Territories, and is a true coal of the bituminous, with less water and ash than many such varieties found in the cretaceous, superior to some of the Vancouver Island and New Zealand lignites. It is more lustrous and of a jet-like color and hardness ; specific gravity 1.379. This Canadian coal is a fuel which ranks as one of the best found in the cretaceous rocks. One land section, or 640 acres of this coal seam, will contain six millions five hundred thousand (6,500,000) tons of coal. The two seams will together contain about eleven million tons of coal.”

I had the coal from the larger or main seam tested in both stationary and locomotive engines with very satisfactory results.

Mr. J. P. Murray, engineer of locomotive No. 78, after using the coal for two days, stated in his report that the coal was equal to the best steam coal imported into this country, and Mr. Dailey, Mechanical Supt. at Medicine Hat, gave a report equally favorable. While the character of the coal in the different coal seams appears to be much the same, this seam is the largest and will be the most profitable seam to work in this district. The cheapest method to open and equip a mine here would be by constructing an incline from the coal seam up to Prairie Level and haul the loaded coal tubs up the incline by a stationary engine to Prairie Level, where it can be dumped into coal cars and by them conveyed to the C. P. R. at Medicine Hat, a distance of about five and one-half ($5\frac{1}{2}$) miles. This method would require the construction of about five and one-half miles of railway over rolling prairie, with down-grades for the loaded cars, and a not very objectionable up-grade for the empty ones returning to the pit. There are no engineering difficulties in the way, neither will there be any expensive bridging. The water ways would only be for the snow melting in spring.

To ship coal by the Saskatchewan River would require the construction of a number of barges and a steam tug boat, which method would give double handling to the coal—*i.e.*, loading the barges and then loading the coal cars from the barges, which would break it up very much, and only give five or six months' shipment, with an idle mine for the balance of the year.

I am, sir, your obedient servant,

JOHN P. LAWSON, M. E.

COAL MINE, Medicine Hat, Nov. 7th, 1883.

P. S.—Opening the mine by a shaft would prove the neatest working arrangement, but it would take a much longer time to develop the mine and be much more expensive. By the first proposed method, after the levels or headings were extended far enough south, a shaft could be sunk to one of them, and hoist the coal through it and save a long haul underground. Then the slope or incline could be used for a year or two until the shaft was ready. Of course the sinking of the shaft and further development of the mine would be as the market warranted the outlay, governed by the market.

J. P. L.

SASKATCHEWAN COAL.

THE HOME ARTICLE LIKELY TO TAKE THE PLACE OF AMERICAN COAL.
YESTERDAY'S TEST AT THE PENITENTIARY.

(*Times*, 13th December, 1883.)

Warden Bedson, of the Provincial Penitentiary, will soon be in a position to write a book of greater worth on what he knows about the fuel question than the work of the late lamented Greely on what he knew about farming. The warden has been experimenting on the subject in the institution over which he presides. The year before last he had wood burned. The next season he tried anthracite coal, which he found to be cheaper than wood. This year he began burning American soft coal. The latter article he found to be much cheaper than either wood or anthracite, but it had some very disagreeable drawbacks. In the first place it kept the institution very dirty, because of its being so dusty and smoky; secondly it makes clinkers very fast, and thirdly it was almost next to impossible to keep the boiler tubes clear—the engineer having to have them cleaned out every eight hours. Hearing so much about the success of the Saskatchewan coal the Warden decided to give it a trial, and a test was accordingly made at the Penitentiary yesterday—the President, the Vice-President and Mr. Luxton being present by invitation. The trial agreeably surprised the Warden, the coal burning much brighter than the American, making no clinkers and little ash or soot, and the engineer was well satisfied that it would not be necessary to have the boiler tubes cleaned more frequently than once in the 24 hours—a most important advantage over the American coal, which made it necessary to clean them every eight hours. The engineer, by request, prepared a written report on the test. We give it in full:—

“I have the honor to report that there were 4,000 lbs. of American coal used in twenty-four hours, beginning at 9 a.m., on the 1st inst. The average temperature of the atmosphere during the day was $12\frac{3}{4}$ degrees above zero.

“During the following twenty-four hours there were 2,900 lbs. of Saskatchewan coal used. The average temperature of the atmosphere was five degrees above.

“The average pressure of steam whilst using American coal was 26 5-6 lbs., being a small fraction of a pound more than when using the Saskatchewan coal.

“While using American coal the wind was very high a good part of the time, which would drive the warm air out of the building, thus requiring more steam.

“There was also considerable steam required for heating water for bathing and scrubbing, which partly accounts for the amount used of American coal being so great.

“A more correct idea of the merits of the two kinds of coal would be got by finding the amount of water a ton of each kind of coal would convert into steam.”